Contract-675-65WR

Assignment 974-012

WORK STATEMENT. TASK 1A

AIR BEARING - TUNNEL TYPE

1. Determine air flow and pressure source.

2. Provide mounting for bearing over water tank. Extend sides to at least 3-inches below surface.

3. Using 9-1/2-inches thin base leader test bearing under various load conditions measure air outlet pressure/flow, cushion stability, flutter of film etc.

4. Repeat tests with 70mm and 5-inches leader.

5. If format changing is necessary, consider design requirements e.g. mechanical against air control.

6. Prepare report giving performance of design, conclusions and recommendations, give all plots, design basis etc.

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WORK STATEMENT. TASK 1B

PHASE 1

ROTARY AIR BEARING

This program is the minimum required to produce information to determine the feasilibity and design parameters for a self powered air bearing.

1. Assemble and mount air bearing test bed.

2. Fit two fans and conduct all necessary tests at 5500 approx. R.P.M., with 9-1/2-inches thin base leader tests to include:

   a) Cushion stability and depth evaluation.
   b) Centering of film, drift off center.
   c) Determination of necessity or otherwise of edge guides.

3. Repeat test #2 using 4 fans at 3450 R.P.M. approx.

4. Repeat test #2 using 2-2-1/2-inches dia. wheels facing out.

5. Repeat test #4 by fitting spacers and cage using 2-2-1/2-inches dia. wheels facing in.

6. Repeat test #5 using 2-2-1/2-inches dia. and 2-'-1/2-inches dia. wheels.

7. From results, select most efficient arrangement and test using 9-1/2-inches thin base leader and lifting range of weights.

8. Repeat test using 70m/m and 5-inches widths of leader.

9. Prepare report giving conclusions and recommendations.

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Assignment 974-006

WORK STATEMENT TASK 2

PHASE 1

POSITIVE PRESSURE TRANSPORT CAPSTAN

1. Determine optimum venturi gap.
2. Measure total output of lamb blower.
3. Measure pressure and flow through venturi.
4. Check effect of closing of orifice holes on venturi performance. Measure pressures and flows through orifice holes.
5. Close venturi and apply vacuum to capstan. Use low pressure side of same blower. Measure low pressure output.
6. Repeat all tests made with positive pressure using negative pressure.
7. Determine efficiencies with both positive and negative pressures applied.
8. Using both wet and dry standard types of film determine maximum torque loads before slippage occurs.
9. Repeat test #8 using no air flow to obtain comparative data.
10. Prepare report giving conclusions and recommendations.

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Assignment 974-013

WORK STATEMENT TASK 3

ROTATRON LIQUID BEARING

1. Using perforated cage, determine performance of bearing using 9-1/2-inches width thin base leader with standard load of approximately 1-1/2 lb. at selected R.P.M.'s.

2. To obtain a centering effect, fit a cushion profiling girdle within the cage and repeat test 1 checking for centering of film action.

3. After centering configuration is determined, establish cushion stability under increasing load conditions using 9-1/2-inches width leader at optimum R.P.M.

4. Repeat test 3 using 70 m/m and 5-inches film widths.

5. Replace perforated cage with slotted cage and repeat all tests as necessary.

6. To establish photographic integrity of the bearing, film exposed to an even density level is to be passed over the bearing, to determine if mottling or streaking etc. occurs.

7. Note all results, plot load, pressure and flow charts, estimate H.P., efficiency etc.

8. Prepare report, with conclusions and recommendations and if necessary sketches of proposed production version.

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Assignment 974-014

WORK STATEMENT TASK 4

RESEARCH INTO HEAT SHOCK FILM DEVELOPMENT

1. Conduct a literature research to define state-of-the-art. Note: emphasis should be placed on H.F. records and reports.

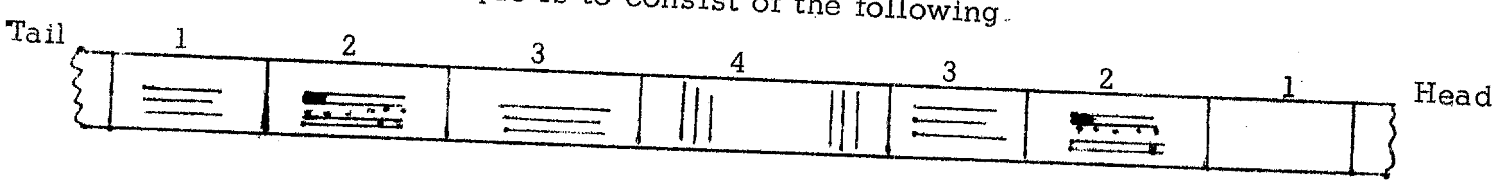
2. On the basis of previous H.F. work and on state-of-the-art findings, design a developing test tank utilizing to the full available equipment.

3. Design and construct models of heat shock generators and power supplies.

4. Assemble test tank ready for test program.

5. Prepare samples of the following emulsions: 4400, 4401, 4404, 8430, 5427, 2427.

6. Each sample is to consist of the following.



a) Film evenly exposed to a known density.
b) Step wedges and resolution targets.
c) Exposed areas for heat shock tests.
d) Exposed area rotated by 90 degrees to determine exposure markings.

7. The above test samples can be used for single levels of heat shock application or variable on set levels during run of film, the lengths represented by item 3 would be for this purpose, one length for up seale heat application and the other for down scale.

8. At least three of each sample should be initially prepared.

(more)

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Assignment 974-014

WORK STATEMENT TASK 4 continued

9. A careful recording of all parameters is required, developer temperature and P. H. F. P. M. of transport, energy level of heat shock generator, depth of meniscus and etc.

10. Determine minimum energy levels to maximum energy levels, determine relationship between basic developer temperature, applicator temperature, transport speed FPM, and fog, density, gamma resolution and etc. Record all data in standard terms.

11. As each stage of this program is reached, a detailed scheduled will be prepared.

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Assignment 974-004

WORK STATEMENT TASK 6

PHASE 2

ELEVATED TEMPERATURE SENSITOMETRIC STUDIES

This phase of the program which is an alternative to Phase 1 will study the emulsions used in the original contract, i.e. film type 4400, 4401 and 4404 but in place of holding gamma to a consistent level, a family of three curves for each emulsion will be determined to enable selection of any gamma best suited to a specific subject matter. The resultant performance in terms of time/temperature, resolution and etc. will be determined.

Contract-675-65WR

Assignment 974-017

WORK STATEMENT TASK 8

RESEARCH INTO FILM DRYING TECHNIQUES

This program is designed to investigate new techniques of drying silver halide emulsion film.

1. Conduct a state-of-the-art survey.

2. Consider all possible methods including negative pressure, cold air, chemical evaporators etc.

3. Conduct laboratory tests to determine feasibility, efficiency, etc. of various methods.

4. On the basis of results, prepare a preliminary design incorporating the recommended techniques.